CLAIMS

1. A mechanochemical sensor comprising:

a minute mechanical structure body having a functional membrane formed at least on one part of its surface;

supporting means for supporting the minute mechanical structure body; and

detection means for detecting the change of a mechanical property of the minute mechanical structure body.

2. A mechanochemical sensor as described in Claim 1 wherein:

the minute structure body comprises a first region having the functional membrane formed on its surface and the first region is a thin layer.

3. A mechanochemical sensor as described in Claim 1 wherein the minute structure body is a plurality of minute structure bodies each comprising a different functional membrane.

4. A mechanochemical sensor as described in Claim 1 wherein the functional membrane is made of a biopolymer or a synthetic polymer.

5. A mechanochemical sensor as described in any one of Claims 1 to 4 wherein the functional membrane is formed directly on a surface of the minute structure body by electro-spray deposition.

6. A mechanochemical sensor as described in any one of Claims 1 to 4 wherein the functional membrane is formed directly on a surface of the minute structure body by ink jet deposition.

7. A mechanochemical sensor as described in Claim 5 wherein:

the detection means comprises a zone which will not be displaced or displaced negligibly even when a mechanical property of the functional membrane is changed, and

the minute structure body has its one end immersed into a test solution such that said zone is close to the surface of the test solution.

8. A mechanochemical sensor as described in Claim 5 wherein:

the detection means comprises a force-detection sensor and an actuator for providing a tension to the functional membrane.

9. A mechanochemical sensor as described in Claim 7 wherein:

the detection means comprises a force-detection sensor and an actuator for providing a tension to the functional membrane.

10. A mechanochemical sensor as described in Claim 5 wherein:

the minute mechanical structure body comprises a minute cantilever having the functional membrane formed thereon; and

the detection means is a sensor capable of detecting the bending deformation of the minute cantilever of the minute mechanical structure body.

11. A mechanochemical sensor as described in Claim 7 wherein:

the minute mechanical structure body comprises a minute cantilever having a functional membrane formed thereon; and

the detection means is a sensor capable of detecting the bending deformation of the minute cantilever of minute mechanical structure body.

12. A mechanochemical sensor as described in Claim 8 wherein:

the minute mechanical structure body comprises a minute cantilever having the functional membrane formed thereon; and

the detection means is a sensor capable of detecting the bending deformation of the minute cantilever of the minute mechanical structure body.

13. A mechanochemical sensor as described in Claim 6 wherein:

the detection means comprises a force-detection sensor and an actuator for providing a tension to the functional membrane.

14. A mechanochemical sensor as described in Claim 13 wherein:

the minute mechanical structure body comprises a minute cantilever having the functional membrane formed thereon; and

the detection means is a sensor capable of detecting the bending deformation of the minute cantilever of the minute mechanical structure body.

15. A mechanochemical sensor as described in Claim 14 wherein:

the minute mechanical structure body comprises a minute cantilever having the functional membrane formed thereon; and

the detection means is a sensor capable of detecting the bending deformation of the minute cantilever of minute mechanical structure body.